CHANGE PAGE

Don't use minocycline as first line oral antibiotic in acne

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Change page aims to alert clinicians to the immediate need for a change in practice to make it consistent with current evidence. The change must be implementable and must offer therapeutic or diagnostic advantage for a reasonably common clinical problem. Compelling and robust evidence must underpin the proposal for change.

Series editor: Joe Collier (changepage@bmj.com), professor of medicines policy, St George's Hospital and Medical School, London. Anyone wishing to propose a change in clinical practice should discuss the proposal with Joe Collier at an early stage.

The clinical problem

Most people develop acne vulgaris at some point in life. Typified by inflammation of hair follicles and accompanying sebaceous glands, acne may require oral antibacterial treatment, particularly in those with moderate to severe disease (an estimated 11% of adolescents[1]). Minocycline is a common choice of drug and is often wrongly assumed to be more effective, easier to take, and less likely to cause bacterial resistance than other tetracyclines.

The evidence for change

Efficacy

A Cochrane review assessed 27 randomised trials, involving a total of 3031 patients with acne vulgaris affecting the face or upper trunk, which compared oral minocycline with placebo or other active treatment.[2] Although minocycline seemed to be an effective treatment for acne, there was no convincing evidence from good-quality studies that it was superior to other oral antibacterials.

These findings were echoed in a pivotal randomised trial involving 649 patients with mild to moderate acne randomised to one of the following regimens: oral minocycline, oral oxytetracycline, topical benzoyl peroxide, or topical benzoyl peroxide plus topical erythromycin.[3] At 18 weeks, the only significant difference between treatments was that more participants rated themselves at least moderately improved with benzoyl peroxide plus erythromycin (the regimen with the highest response rate) than with minocycline (which had the lowest response rate; 66% *v* 54% of patients, odds ratio 1.74 (95% confidence interval 1.04 to 2.90)).

Skin colonisation by erythromycin resistant propionibacteria did not affect reported response to erythromycin based treatments, but, crucially, colonisation with tetracycline resistant propionibacteria reduced the effectiveness of both minocycline and oxytetracycline. We can find no published evidence to support claims that minocycline is less likely than other tetracyclines to cause propionibacterial resistance or that switching to minocycline from another tetracycline will improve response.

Further evidence comes from a randomised trial involving 134 patients with acne, which reported no significant difference between modified release minocycline and lymecycline in the mean reduction of inflamatory lesions.[4]

Evidence that oral minocycline might be more effective than other tetracyclines is, at best, weak, being limited to a few, poor quality trials with highly questionable results.[2 5] Flaws in these studies include a lack of blinding, failure to specify the power of the study, reporting of data for only a proportion of participants, only graphical presentation of data, and failure to cite confidence intervals for key results.

Unwanted effects

Like other tetracyclines, minocycline can cause gastrointestinal upset, candidiasis, photosensitivity, hypersensitivity reactions, and benign intracranial hypertension.[6] However, minocycline seems to be unique in causing potentially irreversible slate-grey hyperpigmentation of the skin. The drug also seems much more likely than other tetracyclines to lead to lupus-like syndrome.

Convenience

The once daily administration of minocycline and the fact that it need not be taken on an empty stomach are theoretical advantages over oxytetracycline and tetracycline.[7] However, lymecycline and doxycycline are also taken once daily, and their absorption is not affected by food.[7]

Cost

The cost to the NHS of six months' treatment with minocycline 100 mg daily (the licensed dose) as either tablets or modified release capsules is around £69 (€103;$134). By comparison, six months' treatment with doxycycline 50 mg once daily costs £27, lymecycline 408 mg once daily costs £46, oxytetracycline 500 mg twice daily costs £40, and tetracycline 500 mg twice daily costs £114.

KEY POINTS

- Oral minocycline is no more effective than other oral tetracyclines in treating acne
- The risk of rare but serious unwanted effects with minocycline makes it less suitable for use than other drugs in its class
- Oral minocycline is more expensive than most other oral tetracyclines
- Patients who need treatment with an oral tetracycline should be prescribed doxycycline, lymecycline, or oxytetracycline

Barriers to change

Years of effective marketing and preferential use in secondary care have helped to establish minocycline as the oral antibacterial of choice for acne. Despite serious unwanted effects, the drug remains widely prescribed. The *British National Formulary* singles out minocycline as offering "less likelihood of bacterial resistance," without discussing its unfavourable risk to benefit profile in acne.[8] Unawareness of the lack of evidence for preferring minocycline, coupled with practitioners' and patients' experience of the drug's undoubted efficacy in acne, represent the greatest barriers to change.

How should we change our practice?

Minocycline should no longer be prescribed as the first line oral tetracycline for patients with acne. There is no compelling evidence that it is more effective or less likely to produce antibacterial resistance than safer, less expensive tetracyclines that are just as easy for patients to take.[7] Where such treatment is indicated, doxycycline, lymecycline, or oxytetracycline is a much better option.